

Information Bulletin

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Title: Analysis of Criticality Safety Nonconformance's at the Plutonium Finishing Plant

Date: June 8, 2006

Identifier: 2006-RL-HNF-0023

Lessons Learned Summary: As normal work processes change from a prescribed routine activity to individual tasks specific to decontamination and decommissioning, criticality safety can be ensured by providing field teams adequate procedures that clearly define the criticality safety boundary and controls. The complex nature of the Plutonium Finishing Plant (PFP) fissile material movement, fissile material labeling and criticality safety inspection procedures made them difficult to understand and follow with workers who now have fewer opportunities to perform these type activities, and led to many of the labeling, posting, and inspection related non-conformances. Field teams should be allowed to share procedure ownership to validate that the procedure and training are adequate.

Discussion of Activities: The PFP identified an unacceptable trend in the discovery of criticality safety non-conformances (described in internal Potential Criticality Nonconformance Response Checklists) and PFP Management directed completion of a field assessment of all PFP fissile material and plant areas associated with fissile material to understand compliance with criticality safety requirements and to surface any previously undiscovered issues.

This effort resulted in the generation of about 40 Potential Criticality Nonconformance Response Checklists covering several categories - including errors in criticality safety postings, fissile material labeling, measurement uncertainty (accurate documentation of fissile values), work control, and configuration control.

Analysis: The analysis identified that PFP procedures for ensuring criticality safety are complicated and in several cases incomplete. Fissile Material Handlers and Area Managers did not have a consistent understanding of how to apply the procedures and did not recognize noncompliant conditions. In addition, oversight by the criticality safety staff was lacking.

PFP management and Fluor Hanford oversight accepted that criticality safety non-conformances would be a recurrent condition and believed the PFP met the intent of criticality safety compliance if an average of less than about two non-conformances were discovered during a single month. The significance of continuing non-conformances was not recognized. Consequently, upper management did not reinforce the expectation for zero tolerance, did not implement a program of zero tolerance, and did not invest in a continuous improvement plan.

Oversight of criticality safety inspections or practices in the field by both management and the criticality safety organization did not surface all the problems because criticality safety staff was not present in the field and because the expectations for criticality safety were neither well defined nor well understood. This shortcoming was also not caught by either internal or external independent assessments.

PFP management failed to fully integrate Criticality Safety Program requirements into PFP implementing procedures and did not fully understand the risks associated with the incomplete

application of these requirements. Workers were not always properly informed or trained to changes that had been incorporated into criticality safety procedures.

All upper-tier requirements must be flowed down into local procedures, and implementation of the requirements must be checked to ensure proper application. If the requirement for measurement uncertainty had been properly implemented, the PFP would have recognized the requirement for U-235, and an over check would have confirmed that PFP had properly implemented the requirement.

Upper management must clearly define the expectations for compliance with criticality safety requirements and ensure continuous improvement is built into the program. Management must also ensure changes are properly implemented at the local level and that training for those changes is adequate.

Corrective actions included revisions to several procedures, formal incorporation of a standard glovebox inventory sheet, and hands-on training to enhance understanding and application of the procedures and are appropriately tracked in the Deficiency Tracking System.

Recommendations:

- Criticality safety can be ensured by development of procedures that are oriented to the task, clearly define the criticality safety boundary, and incorporate upper-tier requirements.
- Implementation of the requirements must be continually checked to ensure proper application.
- Management must clearly define the expectations for compliance with criticality safety requirements and ensure continuous improvement is built into the program.
- Management must ensure changes are properly implemented at the local level and that training for those changes is adequate.

Cost Savings/Avoidance: Not determined

Work Function(s): Authorization Basis, Criticality

Hazard(s): Radiological Release

Keywords: fissile, criticality, plutonium, USQ

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References: EM-RL--PHMC-PFP-2005-0033 "Analysis of criticality safety non-conformances at the PFP"

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